

westward the disturbance decreased rapidly in intensity as it approached the Mexican coast, and moved inland, for the third time, as a weak depression near Vera Cruz on September 30.

Complete information regarding loss of life and prop-

erty damage for this storm is not available at this time, but since it was of hurricane intensity, damage in the Central American countries affected was probably severe.

The tracks of these tropical disturbances of September 1941 are shown on the accompanying chart.

## NOTES AND REVIEWS

W. E. KNOWLES MIDDLETON. *Visibility in Meteorology*. 2nd Edition. Toronto (University of Toronto Press), 1941. 165 pp., 32 figs.

The second edition of this monograph is a comprehensive summary on the theory and practice of the measurement of the visual range. It is still the only book devoted wholly to this subject which, in some respects, has been neglected in this era of expanded transport.

The concisely and carefully written theoretical portions of the first edition have been largely retained in this new issue, with some small improvements in notation, and several important brief additions. Among the topics discussed in the new material are the following: Variation of the extinction coefficient with visual range and with size of water droplets, for different colors; nature of atmospheric aerosols; properties of the eye in the light- and dark-adapted states; and visual range in fog, and its relation to water content.

The "practical" part of the first edition has been superseded by a largely rewritten version. In connection with this, a variety of telephotometers and transmission meters for measuring the atmospheric extinction coefficient are described. Great expansion in scope of the chapter relating to the estimation of the visual range in practice has enabled the author to present a comparative discussion on various visibility scales, a matter of considerable interest to those concerned with the technique of making observations for airway and synoptic reports.

A new chapter on "Forecasting the visual range," and a new appendix on "The visual range of coloured objects" contain material of great practical and theoretical importance.

Revision of the book has increased its size by 61 pages, and the number of figures by 23. The extensive bibliography on visibility and pertinent additional topics given in the work now covers 342 items.—L. P. H.

SVERRE PETERSEN. *Introduction to Meteorology*. New York (McGraw-Hill Book Co.), 1941. ix, 236 pp., 142 figs.

This book is intended as an elementary introduction to general meteorology, for students without previous knowledge of the subject. No mathematics beyond an occasional simple algebraic formula is used; and the elementary physics involved is explained in the text. The emphasis is on synoptic and aeronautical meteorology; but nearly all the more important topics of meteorology proper (i. e., exclusive of optical, electrical, and acoustic phenomena of the atmosphere) are at least briefly discussed.

The opening chapters describe the general nature and structure of the atmosphere, and the principal types of meteorological observations and instruments. A chapter is then devoted to evaporation, condensation, and precipitation, followed by two chapters on adiabatic processes in the atmosphere and atmospheric stability. The next chapter discusses the processes by which transfers of heat and changes of temperature are brought about in the atmosphere, and some of their effects—including modification of lapse rates, occurrence of convection, thunderstorms, fog formation, and ice accretion on airplanes.

A chapter on atmospheric circulation—winds, their relation to pressure distribution and their variation with height; the planetary circulation; turbulence; etc.—is followed by two chapters on air masses and fronts, and a chapter on cyclones (extratropical and tropical) and anticyclones, with a brief allusion to tornadoes and waterspouts. The next three chapters are devoted to the drawing and analysis of synoptic maps, and the forecasting of weather, in accordance with the most recent methods, illustrated by a number of actual examples.

The book concludes with a chapter on climate and the climates of the earth, and one on the history of meteorology. A list of recommended books for further reading, a few short tables, and an index are appended.

## METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR SEPTEMBER 1941

[Climate and Crop Weather Division, J. B. KINCE in charge]

### AEROLOGICAL OBSERVATIONS

By HOMER D. DYCK

Surface temperatures for September were above normal generally over the eastern half of the country and below normal over the western half with the exception of a strip along the Pacific coast which recorded above normal warmth. Plus departures of from 4° to 6° F. were recorded in the southern Lake region, the Ohio Valley and Tennessee and the Middle Atlantic States, while minus departures of from 4° to 6° F. were recorded in the Great Basin.

At 1,500 meters above sea level the 5 a. m. resultant winds for September were from directions to the south of normal over most of the country east of the Rocky Mountains and north of normal at this level over the rest of the country. At 3,000 meters the morning resultant winds were more northerly than normal along the Middle and North Atlantic coast and west of the Rocky Mountains and more southerly than normal elsewhere. At the

5,000 meter level, a comparison of the 5 p. m. resultant winds for September with the 5 a. m. normals shows that the late afternoon resultants were more southerly than the corresponding morning normals at about half of the stations for which these data could be compared.

It is interesting to note that the above-normal temperatures in the eastern half of the country were accompanied by more southerly than normal wind resultants generally and the below normal temperatures in the West coincided with more northerly than normal resultants. Exceptions to this correspondence are the strips along each coast.

Resultant wind velocities at 1,500 meters were above normal over most of the country with the exception of the southern Plateau region and the Middle Atlantic States, where they were slightly below normal. At 3,000 meters resultant velocities were above normal except over the Middle and South Atlantic States, while at 5,000 meters the 5 p. m. resultant velocities were higher than the corresponding 5 a. m. normals over the same regions.

At 1,500 meters the 5 p. m. resultant winds for the